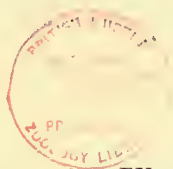


A REDESCRIPTION OF
SPELAEOMYSIS SERVATUS (FAGE)
COMB. NOV.
(MYSIDACEA : LEPIDOMYSIDAE)
FROM THE MATERIAL COLLECTED ON
ALDABRA ATOLL,
WITH A KEY TO THE SPECIES OF LEPIDOMYSIDAE



BY
RAYMOND WILLIAM INGLE

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SYNOPSIS

The crustacean *Spelaeomysis servatus* (Fage) is redescribed from specimens collected on Aldabra Atoll. The species has been transferred from the genus *Lepidomysis* Clarke. A key is provided for the identification of the known species in the genus *Spelaeomysis*.

INTRODUCTION

AMONG the crustaceans collected by Dr. K. G. McKenzie during phase III of the Royal Society of London Expedition to Aldabra (see McKenzie, 1971), were a number of mysidaceans that agree substantially with the descriptions and figures by Fage (1924, 1925) of a species designated by him as *Lepidophthalmus servatus*. For nomenclatorial reasons the generic name used by Fage was replaced by *Lepidops* (Zimmer, 1927) and later by *Lepidomysis* (Clarke, 1961). The type material of this species is from S. Zanzibar, E. Africa. As far as I am aware this material from Aldabra constitutes the second occurrence of this species and extends its range some 400 miles south eastward of the type locality.

Unlike the type material, these Aldabran specimens are well preserved. Adults and juveniles of both sexes are represented, although there are no ovigerous females in the sample. The opportunity has been taken, therefore, to redescribe the species from this fresh material and to compare it with the other known species of Lepidomysidae, *Spelaeomysis bottazzii* Caroli, 1924, *S. quinterensis* (Villalobos, 1951), and *S. longipes* Pillai and Mariamma, 1964. These comparisons have shown that *Lepidomysis* cannot be retained as a separate genus and that *L. servatus*, the only species in the genus, must be transferred to *Spelaeomysis*. The reasons for this decision are discussed on p. 207. The definition of the genus *Spelaeomysis* is amended slightly and a key is provided to separate the species belonging to this genus.

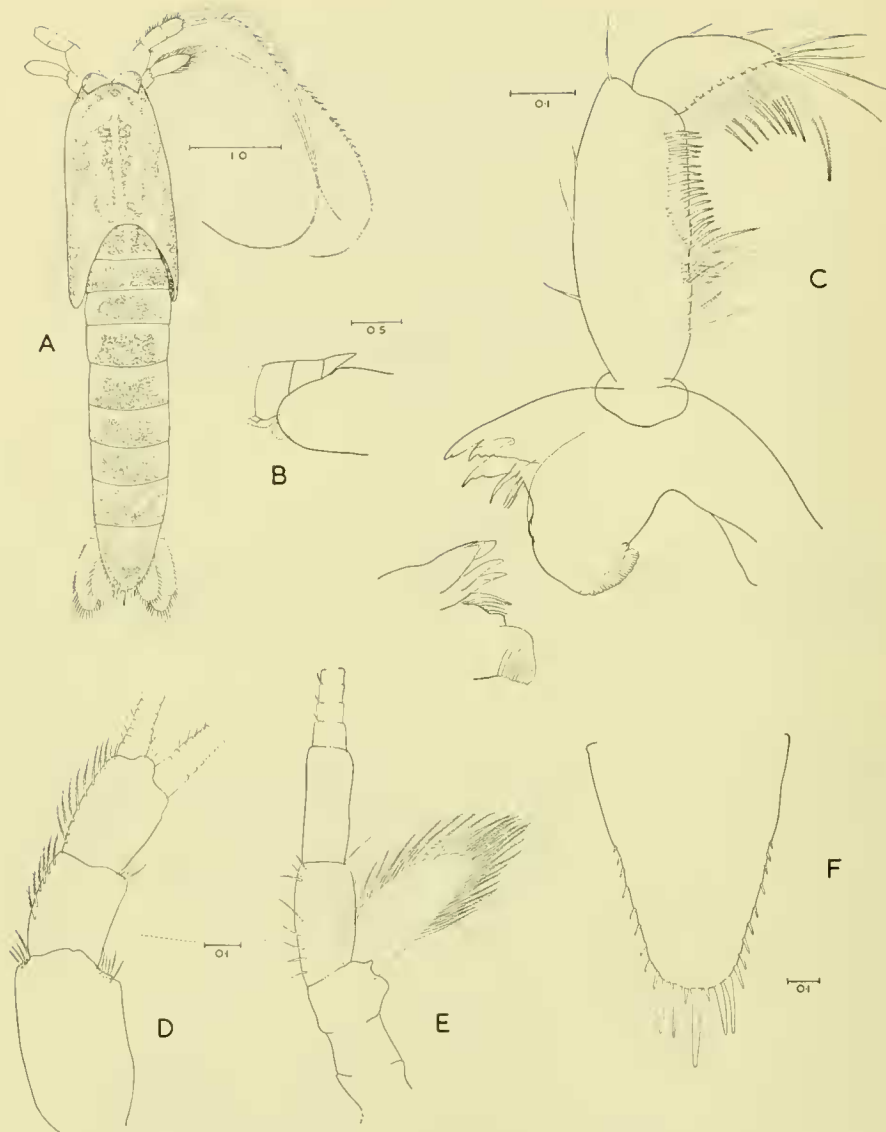


FIG. 1. *Spelaeomysis servatus* (Fage). Male, 5.5 mm, t.l. Aldabra Atoll. A. Dorsal view showing chromatophore pattern, thoracic limbs omitted. B. Lateral view showing projecting scale of penultimate thoracic segment. C. Left mandible, ventral aspect, lower inset - distal portion of right mandible. D. Right antennule, peduncle and proximal flagella segments, ventral aspect. E. Left antenna, peduncle and proximal flagella segments, ventral aspect. F. Telson, dorsal aspect. Scales in mm.

SYSTEMATICS

Family **LEPIDOMYSIDAE** Clarke, 1961 : 251*Spelaeomysis servatus* (Page) comb. nov.

Lepidophthalmus servatus Page, 1924 : 2127; 1925 : 525, figs 1-7.

Lepidops servatus; Zimmer, 1927 : 644; Gordon, 1960 : 299, 308, figs 20, 21, 27, 28.

Lepidomysis servatus; Clarke, 1961 : 251.

MATERIAL EXAMINED. 20 ♂♂, 3.0-5.5 mm, 17 ♀♀, 4.0-6.0 mm, (total lengths measured from distal margins of eyes to distal margins of telsons). Station 30, Aldabra Atoll, Indian Ocean, lat. 9° 24' S., long. 46° 20' E, local coordinates used by Royal Soc. Exped. 3755, 0525. Tide-dominated saline seepage pool in *Pemphis* scrub. Salinity 23.5‰. Associated fauna: *Cirolana* sp. marine molluscs, marine alga *Caulerpa verticillata*. Collected by Dr. K. G. McKenzie, 1.2.1968.

DESCRIPTION. *Male* (fig. 1A), body sub-cylindrical, carapace lateral margins strongly deflected ventrally, posterior expansions reaching to middle of first abdominal segment, antero-lateral expansions extending beyond rostral apex, rostrum broadly rounded. Carapace with a pair of faint longitudinal grooves, extending forward from posterior margin of carapace to its middle and then strongly deflected ventrally. Last two thoracic segments dorsally exposed, penultimate segment with a well developed scale overlapping the postero-median carapace margin and shown in lateral aspect in fig. 1B. Outline of thoracic and abdominal segments continuous. First abdominal segment shortest, sixth segment longest. Postero-ventral margins of segments 3-5 each with a single broad lamella arising between the pleopod bases and increasing in size respectively on each segment. Telson (fig. 1F) linguiform, posterior margin with a long median spine flanked on either side by one short and two long spines; lateral margins unarmed proximally, but with a row of 9 or 10 spines in the distal two thirds, increasing in length posteriorly. Each eyestalk (eye-plate) flattened dorso-ventrally and sub-triangular, narrowing anteriorly with inner margin curved, the cornea well developed. Antennule (fig. 1D), first peduncular segment longer than second segment, third sub-equal to second, inner flagellum reaching to middle of third abdominal segment, outer flagellum slightly shorter than inner one and with aesthetascs on inner margins of segments, decreasing in length distally. Antenna (fig. 1E), sympod three-segmented, first to third segments incompletely separated, third segment with a sub-acute process on outer distal margin. Exopod (scale) sub-oval, about half as long again as first segment of endopod peduncle, whole margin of scale setosed except near base. Peduncle of endopod formed of two sub-equal segments, flagellum reaching to second abdominal segment. Labrum outline shown in fig. 2D. Left mandible (fig. 1C), with a strongly bifid incisor process, each bifurcation faintly dentate, lacinia mobilis prominent and dentate, four penicils (spines) present, molar process truncate. Right mandible with lacinia mobilis bifid (inset to fig. 1C), and with molar process differing in shape from that of left mandible. Palp stout and three-segmented, first segment short, second longest and with pectinate and simple setae, distal segment narrowest and with long pectinate and simple setae. Maxillule (fig. 2B), proximal endite with five setae (three distal and two proximal) and four weakly

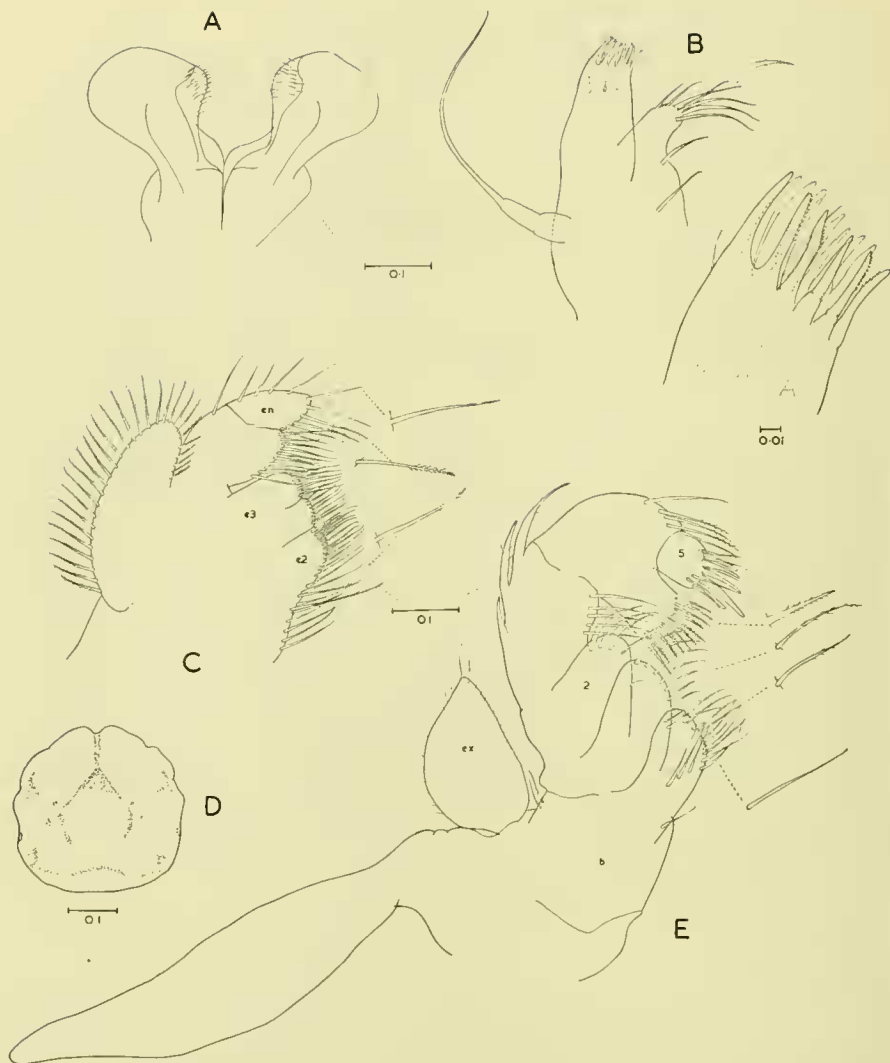


FIG. 2. *Spelaeomysis servatus* (Fage). Male, 5.5 mm. t.l. Aldabra Atoll. A. Labium. B. Right maxillule, right inset—distal portion of major lobe. C. Right maxilla. D. Labrum. E. First right thoracic limb. All from ventral aspect. Scales in mm.

pectinate long spines distally. Distal endite with three subterminal setae, fourteen or fifteen strong spines (some pectinate) and one or two simple setae. Maxilla (fig. 2C), exopod oval and with twenty nine or thirty long plumose setae, distal lobe well developed, proximal lobe undifferentiated, distal endopod segment (*en*) smaller than proximal segment, latter with a slightly expanded inner margin, endite of second segment (*e2*) of sympod and bifid endite of third segment (*e3*) well developed. Maxilla with simple and pectinate setae of types shown in insets to fig. 2C. Labium (fig. 2A), symmetrical and deeply cleft, inner margins of each lobe setose. First thoracic limb (fig. 2E), with coxa not clearly demarcated from basis (*b*), inner margin of basis expanded. First, second (2) and fourth endopod segments with inner margins expanded, fifth (5) segment truncate. Inner margin of fourth segment invested with a row of stout pectinate setae. Outer distal margin of third segment with three long spines, remaining segments of endopod with plumose or with simple setae as shown in figure. Exopod (*ex*) reduced to a lanceolate scale bearing two terminal setae and a row of fine short hair-like setae on both margins, epipod long. Second thoracic limb (fig. 3A), coxa demarcated from basis, first endopod segment almost as long as second segment, third segment longest, fourth longer than fifth. Inner margins of third to fifth segments with stout pectinate and plumose setae. Exopod well developed and nine-segmented, basal segment longest, seven distal segments each with a pair of plumose setae. Third, fourth, fifth and sixth thoracic limbs all similar in shape. Fifth limb (fig. 3B), with coxa not differentiated from basis, length of first endopod segment about one third the length of second segment, third segment about two and a half times length of second, fourth slightly shorter than third, claw about one fifth length of fifth segment. Exopod long, basal segment longest, ten distal segments (not shown in figure) each with a pair of long plumose setae. Seventh thoracic limb (fig. 3C) with coxa not differentiated from basis. First endopod segment slightly shorter than second (2), third almost three and a half times length of second, fourth slightly longer than third and with an outer proximal row of six pectinate setae, fifth segment about two thirds length of fourth, claw about half the length of fifth segment. Exopod slightly shorter than those on preceding limbs. Eighth thoracic limb (fig. 3D), with coxa slightly differentiated from basis. Coxal segment with inner broad setose penial lobe. First and second endopod segments equal in length, third segment about three and a half times the length of second, fourth much longer than third and with outer proximal row of seven and inner distal row of three pectinate setae, fifth segment shorter than fourth, inner margin with a row of fifteen long pectinate setae, claw almost half length of fifth segment. Exopod with distal segments not clearly differentiated.

First to fifth pleopods biramous and invested with plumose setae. Endopod one-segmented and increasing in length progressively from first to fifth pleopods. Exopods of pleopods three-segmented with first segment shortest. First pleopod (Fig. 4A) with second and third segments of exopods equal in length, second segment with a small longitudinal setose ridge on inner ventral surface. Second pleopod (fig. 4B), with second exopod segment longest and broadly expanded, inner margin with a proximal row of graded setae and a distal row of retinaculae; a ventral

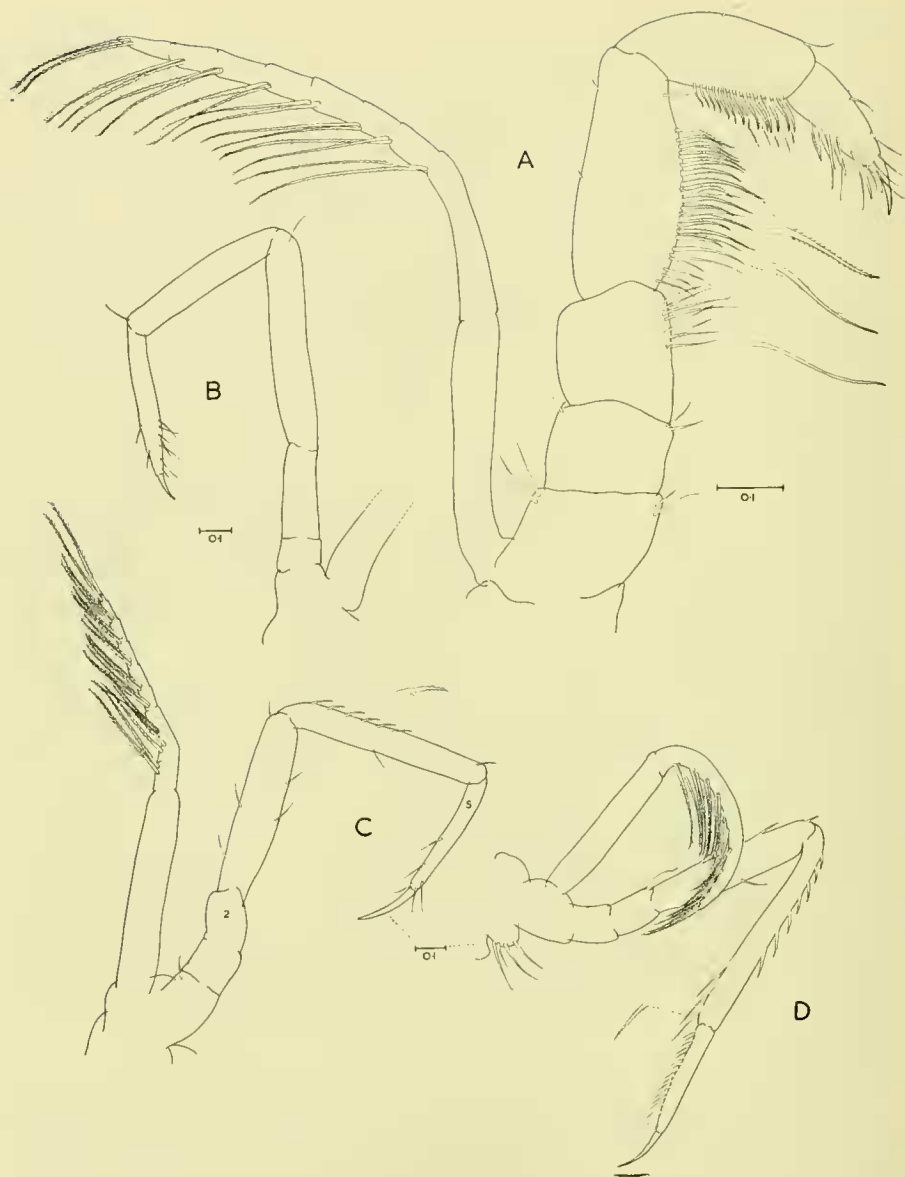


FIG. 3. *Spelaeomysis servatus* (Fage). Male, 5.5 mm, t.l. Aldabra Atoll. A. B. C. D. Second, fifth, seventh, eighth right thoracic limbs respectively, ventral aspects. Scales in mm.

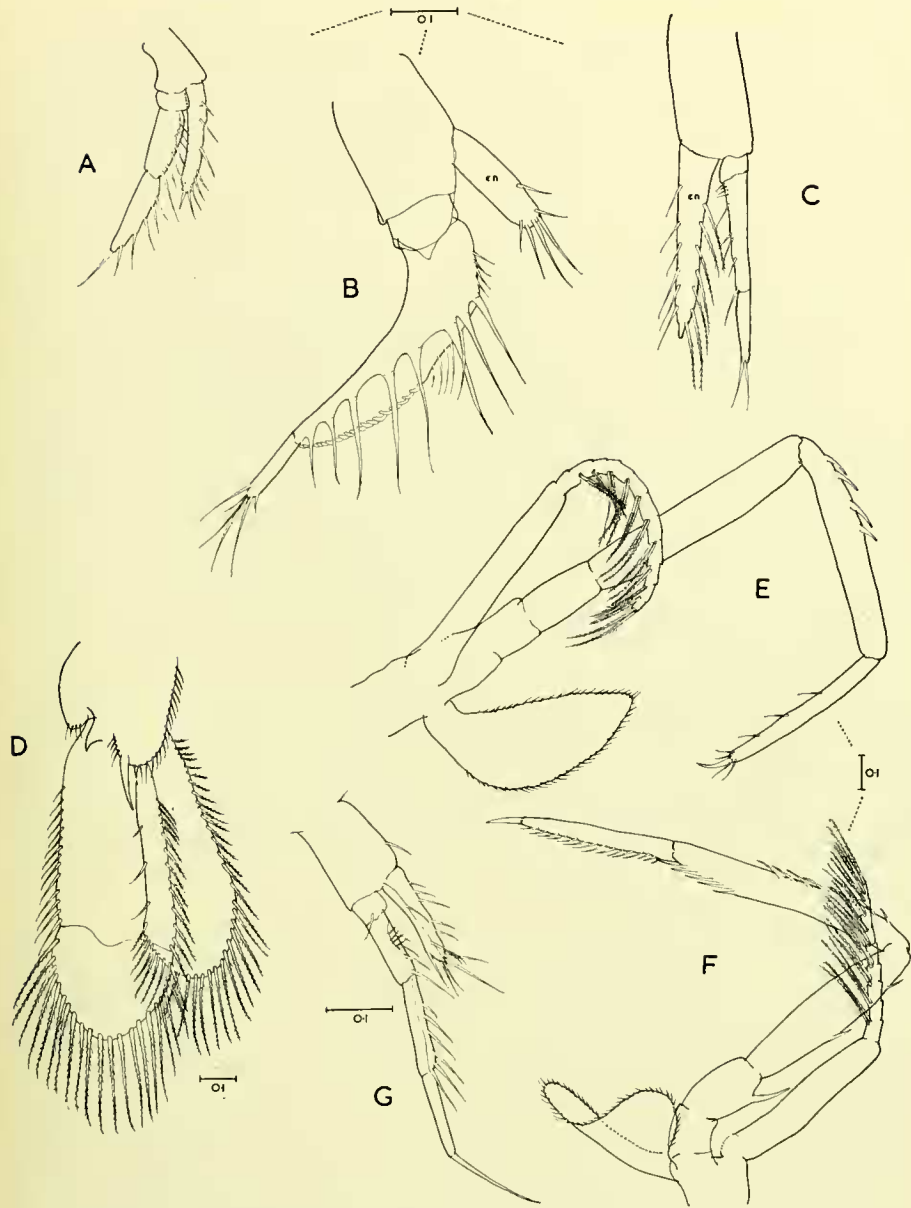


FIG. 4. *Spelaeomysis servatus* (Fage). Aldabra Atoll. Male 5.5 mm, t.l. A. B. C. First, second, third right pleopods respectively. D. Right uropod. Female 6 mm, t.l. E. F. Seventh and eighth thoracic limbs respectively. G. Second right pleopod. All ventral aspects. Scales in mm.

oblique sinuous ridge arising from ventral surface of second segment invested with long setae. Pleopods three (Fig. 4C) to five similar in shape. Uropods longer than telson, ventral distal margin of sympod prolonged backwards and shaped as depicted in fig. 4D and with a long curved spine. Inner margin with short setae. Exopod with distal transverse suture, endopod one-segmented. Outer exopod margin, proximal to suture, with a graded row of non-plumose setae, rest of exopod margin with plumose setae. Endopod outer and distal margins invested with plumose setae.

Female. The female differs from the male in the following features. (1) Second to eighth thoracic limbs each bear an oostegite arising from inner surface of coxa (figs. 4, E, F), and increasing in size posteriorly. (2) Seventh thoracic limb (fig. 4E), with first endopod segment much shorter than second, third segment slightly less than three times length of second, fourth slightly shorter than third and with outer proximal row of four prominent pectinate setae, fifth segment about three-quarters length of fourth, claw about one fifth length of fifth segment. (3) Eighth thoracic limb (fig. 4F), with first endopod segment shorter than second, third about two and a half times the length of second, fourth with eight pectinate setae on outer proximal margin and five pectinate setae on inner distal margin, (shorter than those of male), claw slightly less than a quarter length of fifth segment. (4) Second pleopod (fig. 4G), with a four-segmented exopod second segment shorter than either third or fourth, fourth invested with a long stout setae.

Juveniles. The smallest specimens (♂ 3 mm, ♀ 4 mm), have the proportions of the segments of thoracic limbs similar to those described for the adult male. In particular, the claws of thoracic limbs seven and eight are nearly half the length of segment five of these respective limbs. Compared with the adults, juveniles have about half the number of setae on the fourth segment of thoracic limbs seven and eight, and in juvenile females only half the adult number of setae are present on the fifth segment of limb eight. The telson spines of juveniles are longer. The median spine is more than one third the telson length, whilst in adults it is less than one third of the length.

REMARKS. The specimens of *Spelaeomysis servatus* from Aldabra, the original descriptions of the species by Fage (1924, 1925), and four specimens (3 ♀♀ and 1 ♂) of the type series examined, all agree, except in the following features. (1) The eyestalks of the Aldabran specimens and of the four types are subquadrate, but do not have the inner distal margins acutely sloping as depicted by Fage (1925, fig. II). (2) The dorsal surfaces of segments two and three of the antennal sympod of the Aldabran and type specimens are not invested with setae as shown by Fage in his fig. III. (3) The structure of the male's second pleopod of the Aldabran material and of the type specimen examined does not agree with the figure of this appendage given by Fage in his fig. IV. This difference may be due to an abnormal flattening of his material after mounting as a micro-preparation. (4) Fage figures very short telson spines (his fig. VII), the median spines measuring only about one sixth of the telson length. These spines on the Aldabran and the type specimens examined measure about one third of the telson length.

DISCUSSION. *Spelaeomysis servatus* was first collected in the surface lake water of a coralline grotto on Zanzibar Island, E. Africa (see Allaud & Jeannel, 1914: 381). The specimens from Aldabra Atoll are from a limestone seepage pool and were also collected near the surface of the water during a flowing tide (personal communication from Dr. K. G. McKenzie). Both habitats are similar and of the type in which members of the hypogean fauna are often found. Although the Aldabran specimens were taken from an exposed pool, it seems unlikely that this is their normal habitat. It is possible that they were carried into this surface pool by the upwelling of water caused by the incoming tide passing through the subterranean limestone interstices. Whether, on Aldabra, this mysid inhabits hypogean water that is cut off from the surrounding sea (and is of a lower salinity), or whether it is a true marine subterranean dweller, remains to be investigated. At present there is little information available about the biotopes of the other species of *Spelaeomysis*.

Gordon (1960 : 308) defined the family Lepidopidae (now Lepidomysidae). This family contains two genera at present, *Lepidomysis* Clarke, (1961) and *Spelaeomysis* Caroli, (1924). The genus *Spelaeomysis* was redefined by Pillai & Mariamma, (1964 : 223) and all the features listed in their definition, except for "eye-plates without visual elements", are present in material examined of *L. servatus*. The presence or absence of visual elements does not constitute a valid generic character, as in the Mysidacea these elements can be developed, reduced or can be absent in different species within the same genus (Pillai & Mariamma, 1964 : 119). There is no justification, therefore, for maintaining two genera in the family Lepidomysidae, and the species *Lepidomysis servatus* is now transferred to the genus *Spelaeomysis* Caroli. This last generic name has precedence over *Lepidomysis* Clarke, 1961. The family Lepidomysidae and the genus *Spelaeomysis* can now be defined as follows: Body depressed or sub-cylindrical. Carapace produced antero-laterally into two rounded lobes and postero-laterally into large wings. Last two thoracic segments dorsally exposed, penultimate segment with anteriorly directed dorsal scale overlapping postero-median margin of carapace. Sixth abdominal segment slightly longer than fifth. Telson triangular or linguiform with margins partly or completely spinose. One or two eye-plates with or without visual elements. Labium with lobes well separated. Mandible with well developed incisor and molar processes; palp large and with robust pectinate spines on outer margin of second and third segments. Maxillule with a two-segmented reflexed palp bearing a long distal seta. Maxilla with inner margin of endopod segment expanded. Endopod of first thoracic limb with well developed edites, exopod reduced to a small unsegmented scale, epipod large. Endopod of second thoracic limb stout, exopod long and segmented. Thoracic limbs three to eight sub-equal or eighth very long. Coxa of eighth limb of male with penial lobe (?absent in *S. bottazzii*). Coxae of second to eighth thoracic limbs of female with oostegites. Pleopods alike in both sexes, except for sexual dimorphism of second pair, increasing in size from first to fifth pair, biramous, with one segmented-endopod and three-segmented exopod (four-segmented on second pair in female). Chitinous lamellae on postero-ventral margins of abdominal segments three to five. Uropod with a backward prolongation of sympod, exopod with a lateral suture (very faint in *S. bottazzii*), endopod without statocyst.

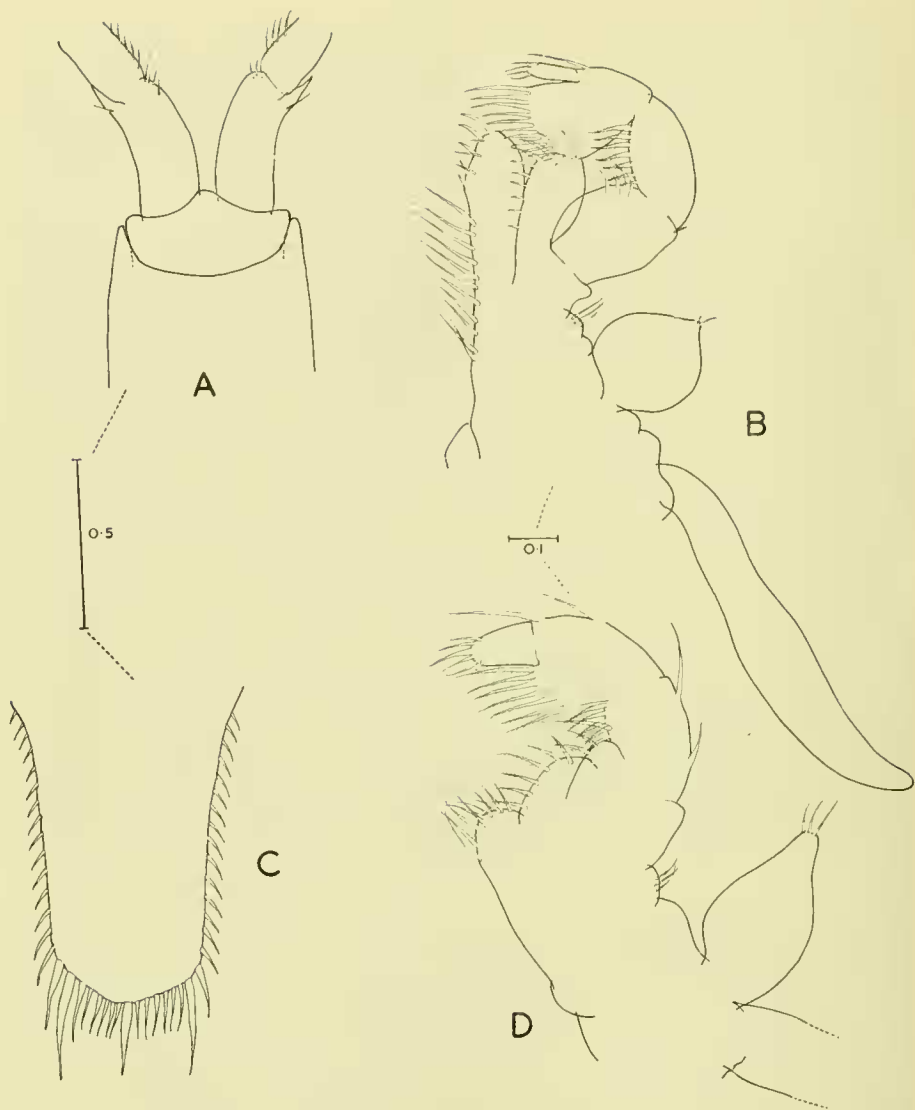


FIG. 5. A. *Spelaeomysis longipes* Pillai & Mariamma. Male, 5.6 mm, t.l. paratype, Kottayam, Kerala, India. Anterior portion of carapace, eye-plate and peduncular segments of antenna, dorsal aspect. B. *Spelaeomysis quinterensis* (Villalobos) male 7.5 mm, t.l. paratype, Gruta de Quintero, Mexico. First left thoracic limb, dorsal aspect. *Spelaeomysis bottazzii* Caroli, female 10.0 mm, t.l. Terra d'Otranto, Italy. C. Telson, dorsal aspect. D. First left thoracic limb, dorsal aspect. Scales in mm.

KEY TO DETERMINATION OF THE SPECIES OF THE GENUS *SPELAEOMYSIS* CAROLI

- 1 (2) A pair of eye-plates present (fig. 1A). Antennule, basal segment, outer distal margin not produced 3
- 2 (1) A single eye-plate present (fig. 5A). Antennule, basal segment, outer distal margin produced as a conical acute process (fig. 5A).
Spelaeomysis longipes Pillai & Mariamma (Kerala)
- 3 (4) First thoracic limb (fig. 2E), fifth segment (5) stout, length equal to or slightly exceeding breadth, inner margins of basis (b) and of endopod first segment expanded as broad endites 5
- 4 (3) First thoracic limb (fig. 5B), fifth segment slender, length greater than breadth, inner margins of basis and that of endopod first segment expanded as narrow endites
Spelaeomysis quinterensis (Villalobos) (Yucatan)
- 5 (6) Distal two thirds of telson margin with spines, apex rounded (fig. 1F). Eye-plates with visual elements (fig. 1A). First thoracic limb (fig. 2E), fifth segment (5), length equal to breadth, fourth segment inner margin with strongly produced endite. *Spelaeomysis servatus* (Fage) (Zanzibar, Aldabra)
- 6 (5) Whole of telson margin with spines, apex sub-acute (fig. 5C). Eye-plates without visual elements. First thoracic limb, fifth segment, length exceeding breadth (fig. 5D), fourth segment with inner margin not strongly produced.
Spelaeomysis bottazzii Caroli (Otranto)

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